H. O. HARDEN.

Orthographic and Numerical Frame.

No. 198,018. Patented Dec. 11, 1877

Fig. 1

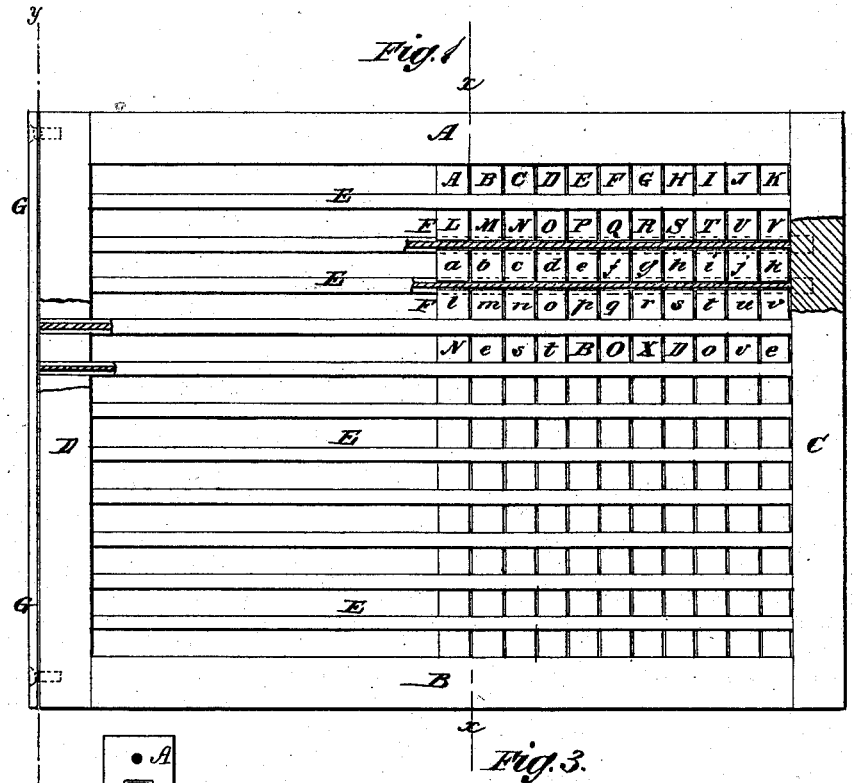


Fig. 2.

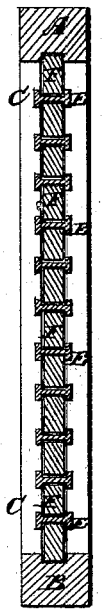


Fig. 3.

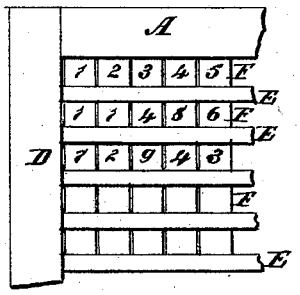
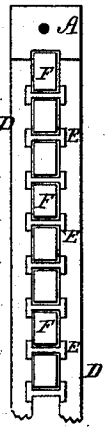


Fig. 4.



WITNESSES:

Francis McArdle.

J. H. Scarborough

INVENTOR:

H. O. Harden

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY O. HARDEN, OF STOUTSVILLE, OHIO.

IMPROVEMENT IN ORTHOGRAPHIC AND NUMERICAL FRAMES.

Specification forming part of Letters Patent No. **198,018**, dated December 11, 1877; application filed September 29, 1877.

To all whom it may concern:

Be it known that I, HENRY O. HARDEN, of Stoutsville, in the county of Fairfield and State of Ohio, have invented a new and useful Improvement in Orthographic and Numerical Frames, of which the following is a specification:

Figure 1 is a front view of my improved device, parts being broken away to show the construction. Fig. 2 is a sectional view of the same taken through the line *x x*, Fig. 1. Fig. 3 represents a part of the reverse side of the same. Fig. 4 is a transverse section through line *y y* of Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved device for use in schools and families, for instructing pupils in orthography and arithmetic, which shall be so constructed as to enable an unlimited number of words to be formed, and to enable the fundamental rules of arithmetic, cancellation, decimals, and percentage to be illustrated and explained, as well as various facts in mensuration, employing the object method of teaching, the pupil seeing a physical representation of the lesson being taught.

The invention consists in the combination of the grooved side bars, the end bars, the grooved parallel slats, the sliding blocks, and the detachable strip, with each other, as hereinafter fully described.

A B C D represent the side and end bars of a rectangular frame. E are cross-slats, which are parallel with each other and with the side bars A B of the frame. The slats E at one end are framed into the end bar C. The other end bar, D, is made in two parts, which are securely attached to the front and rear sides of the ends of the slats E and the side bars A B.

The upper and lower sides of the slats E and the inner edges of the side bars A B are grooved longitudinally to receive the blocks F, each of which has a letter upon one side and a numeral upon the other side, and which are slipped into said grooves through the spaces between the parts of the end bars D. The spaces between the parts of the end bar D are closed by a strip, G, detachably attached to the end of the frame, so that the blocks F can be readily inserted, removed, changed, &c., as may be desired.

The blocks F are designed to be made an inch square, to adapt them for use in illustrating and explaining facts and problems in mensuration—as, for instance, the length of an inch, the size of a square inch, that twelve inches make a foot, &c.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with grooved side bars A B and end bar C, of the bars D D, secured on each side of the tenons of the side bars, the opening thus formed being covered detachably by strip G, as and for the purpose specified.

HENRY O. HARDEN.

Witnesses:

T. J. MCFARLAND,

S. THEODORE SHAEFFER.